



# EFFECTIVENESS OF SELECTED STRESS MANAGEMENT TECHNIQUES ON COGNITIVE AND PHYSICAL SYMPTOMS OF STRESS

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## ABSTRACT

An experimental study design with the purpose to find out prevalence and compare cognitive and physical symptoms of stress among B.Sc (Nursing) students in selected nursing college at Srikakulam town, Andhra Pradesh was performed. Stress management techniques training were given to nursing students in experimental group daily for a period of 6 weeks. The study identified that there is significant decrease in post-test cognitive symptoms of stress in experimental group like indecisiveness, inability to concentrate, poor judgment, trouble thinking clearly, seeing only negative side of the issues, anxious or racing thoughts, constant worrying, loss of objectivity, fearful anticipation that something happens ( $p < 0.05$ ). There is also significant decrease in post-test physical symptoms of stress in experimental group like headache, backache, muscle tension and stiffness, diarrhea, insomnia, chest pain, rapid pulse, weight loss and hair fall ( $p < 0.05$ ). The chi-square values for post-test cognitive symptoms for Experimental and Control groups shows statistical significance at 0.05 level of significance for inability to concentrate (9.33), trouble thinking clearly (0.03), anxious or racing thoughts (1.94) and fearful anticipation that something happens (4.48). The post-test physical symptoms chi-square values for Experimental and Control groups shows statistical significance at 0.05 level for physical symptoms like headache (20.18), backache (12.18), muscle tension and stiffness (4.63), diarrhea (4.75), constipation (6.11), dizziness (6.88), insomnia (34.18), chest pain (7.92) and rapid pulse (47.23). As there was significant decrease in cognitive and physical symptoms of stress, stress management techniques are effective.

**KEY WORDS:** Stress Management Techniques, Cognitive Symptoms, Physical Symptoms, Stress, Effectiveness.

## INTRODUCTION:

In India majority of students studying in nursing courses are females and belong to adolescent age groups (Rajesh Kumar and Nancy, 2011)<sup>8</sup>. As they are in adolescent age groups, they are experiencing stressors of adolescent age groups, female gender and stressors related to nursing education. Many psychosomatic symptoms of stress are prevalent. Many studies focussed on prevalence of stress symptoms. But very few studies are available related to effectiveness of stress management techniques on cognitive and physical symptoms of stress.

Innes (1998) stated that migraines, colds and infections are common physical symptoms of stress, while cardiovascular disease and asthma are more serious physical illnesses caused by stress. Stress affects the mental health of an individual by causing irritation, anxiety, difficulties concentrating and in more serious cases clinical depression.<sup>4</sup> Pratibha, P.K (2009) reported that stress affects physical health, psychological and behavioral perspectives.<sup>7</sup> American Psychological Association (2014) stated that the most common symptoms of acute stress is manageable and treatable.<sup>1</sup>

## Objectives of the study:

- To assess prevalence of cognitive and physical symptoms of stress
- To compare pre-test and post-test cognitive and physical symptoms of stress
- To find out the effectiveness of stress management techniques on cognitive and physical symptoms of stress.

## Hypothesis:

**H<sub>0</sub>:** There is no association between pre-test and post-test cognitive and physical symptoms of stress.

**H<sub>1</sub>:** There is significant decrease in post-test cognitive and physical symptoms of stress.

## METHODS AND MATERIALS:

An experimental design was conducted with consent on 114 nursing students by simple, random, probability sampling technique and through lottery method the students are assigned into control group (58 students) and (56 students) into experimental group. The control group was not given any stress management program. The experimental group received Stress management training program for six weeks, daily. The Pre and post-test questionnaire is used to collect data from the students. Stress management program is included seminar on stress and its management, deep breathing exercises, progressive muscle relaxation, massage therapy, visualization, stress diary, role play, stress journal and peer group sharing.

## Description of the tool:

**Demographic data:** This consists data like age, sex, state, year of study, marital status, monthly income of the family.

**Cognitive and Physical Symptoms:** The students need to mark either YES or NO for 11 (Cognitive) and 16 (Physical) specified symptoms.

**Data Analysis:** Categorical data of the study was reported as frequencies and percentages. Chi-square is used to find the significant association between pre-test and post-test symptoms in experimental group and control group.

## RESULTS:

**Table 1: Frequency and Percentage distribution of participants according to demographic data**

DEMOGRAPHIC VARIABLES	EXPERIMENTAL GROUP (N=56)		CONTROL GROUP (N=58)	
	n	%	n	%
<b>Age</b>				
18-20	37	66.1	35	60.3
21-23	18	32.1	23	39.6
>23	1	1.8	0	0
<b>Sex</b>				
Male	0	0	0	0
Female	56	100	58	100
<b>State</b>				
AP	43	76.79	27	46.55
Telangana	0	0	0	0
Tamil nadu	0	0	0	0
Kerala	10	17.86	36	62.07
Others	3	5.36	4	6.90
<b>Present year of study</b>				
I year	15	26.78	15	25.86
II year	15	26.78	13	22.41
III year	12	21.42	15	25.86
IV year	14	25	15	25.86
<b>Marital Status</b>				
a. Un married	54	96.43	56	96.55
b. Married	2	3.57	2	3.45
c. Widow	0	0	0	0
<b>Monthly income of family in Rupees/month</b>				
a. Below Rs. 10,000	17	30.36	28	48.27
b. Rs.10,000 – 20,000	23	41.07	21	36.20
c. Rs.Above 20,000	16	28.57	9	15.52

Table 2: Frequency and Percentage distribution of prevalence of cognitive and physical symptoms of stress

Variables	Control Group (N=58)		Experimental Group (N=56)	
	Pre-Test		Pre-Test	
	n	%	n	%
<b>Cognitive Symptoms of Stress</b>				
Memory problems	39	67.2	40	71.4
Indecisiveness	12	20.7	19	33.9
Inability to concentrate	35	60.3	42	75.0
Poor Judgment	26	44.8	26	46.4
Trouble thinking clearly	27	46.6	34	60.7
Seeing only negative side of issue	15	25.9	18	32.1
Anxious or racing thoughts	29	50.0	29	51.8
Constant worrying	28	48.2	31	55.4
Loss of objectivity	12	20.7	24	42.9
Fearful anticipation that something happens	32	55.2	34	60.7
Others	0	0	3	5.4
<b>Physical Symptoms of Stress</b>				
Headache	48	82.8	47	83.9
Backache	27	46.6	33	58.9
Muscle tension and stiffness	20	34.5	28	50.0
Diarrhea	12	20.7	17	30.4
Constipation	13	22.4	13	23.2
Nausea	14	24.1	16	28.6
Dizziness	15	25.9	32	57.1
Insomnia	18	31.0	24	42.9
Chest pain	14	24.1	16	28.6
Rapid Pulse	26	44.8	19	33.9
Weight gain	12	20.7	8	14.3
Weight loss	20	34.5	34	60.7
Skin Breakout	2	3.4	7	12.5
Frequent colds	18	31.0	25	44.6
Hair loss/loss	42	72.4	49	87.5
Others	3	5.1	4	7.2

Table 3: Comparison between pre-test and post-test Cognitive symptoms of stress in Control and Experimental groups.

Cognitive Symptoms		Control Group (N=58)				$\chi^2$	P-value	Experimental Group (N=56)				$\chi^2$	P-value
		Pre-Test		Post-Test				Pre-Test		Post-Test			
		n	%	n	%			n	%	n	%		
Memory problems	Present	39	67.2	35	60.3	0.59	0.43	40	71.4	33	58.9	1.93	0.16
	Absent	19	32.8	23	39.7			16	28.6	23	41.0		
Indecisiveness	Present	12	20.7	8	13.8	0.97	0.32	19	33.9	5	8.9	10.39	0.0012*
	Absent	46	79.3	50	86.2			37	66.0	51	91.1		
Inability to concentrate	Present	35	60.3	33	56.9	0.14	0.70	42	75.0	16	28.6	24.17	<0.01
	Absent	23	39.7	25	43.1			14	25.0	40	71.4		
Poor Judgment	Present	26	44.8	19	32.8	1.78	0.18	26	46.4	10	17.9	10.48	0.0012*
	Absent	32	55.2	39	67.2			30	53.6	46	82.1		
Trouble thinking clearly	Present	27	46.6	24	41.4	0.32	0.57	34	60.7	13	23.2	16.17	0.00005*
	Absent	31	53.4	34	58.6			22	39.3	43	76.8		
Seeing only negative side of issue	Present	15	25.9	13	22.4	0.19	0.66	18	32.1	7	12.5	6.23	0.012*
	Absent	43	74.1	45	77.6			38	67.9	49	87.5		
Anxious or racing thoughts	Present	29	50.0	34	58.6	0.87	0.35	29	51.8	17	30.4	5.31	0.0211*
	Absent	29	50.0	24	41.4			27	48.2	39	69.6		
Constant worrying	Present	28	48.2	23	39.7	0.88	0.34	31	55.4	14	25.0	10.74	0.001*
	Absent	30	51.7	35	60.4			25	44.6	42	75.0		
Loss of objectivity	Present	12	20.7	6	10.3	2.37	0.12	24	42.9	9	16.1	9.67	0.001*
	Absent	46	79.3	52	89.7			32	57.1	47	83.9		
Fearful anticipation that something happens	Present	32	55.2	30	51.7	0.14	0.70	34	60.7	18	32.1	9.19	0.0024*
	Absent	26	44.8	28	48.3			22	39.3	38	67.9		
Others	Present	0	0	0	0	-	-	3	5.3	2	3.6	0.21	0.5
	Absent	58	100	58	100			53	94.7	54	96.4		

\*Significant at 0.05

**Table 4: Comparison between pre-test and post-test Physical symptoms of stress in Control and Experimental groups**

Physical Symptoms		Control Group (N=58)				$\chi^2$	P-value	Experimental Group (N=56)				$\chi^2$	P-value
		Pre-Test		Post-Test				Pre-Test		Post-Test			
		n	%	n	%			n	%	n	%		
Headache	Present	48	82.8	42	72.4	1.79	0.18	47	83.9	17	30.4	32.81	<0.01*
	Absent	10	17.2	16	27.6			9	16.0	39	69.6		
Backache	Present	27	46.6	32	55.2	0.86	0.35	33	58.9	13	23.2	14.76	0.0001*
	Absent	31	53.4	26	44.8			23	41.0	43	76.8		
Muscle tension and stiffness	Present	20	34.5	22	37.9	0.15	0.69	28	50.0	11	19.6	11.37	0.00074*
	Absent	38	65.5	36	62.1			28	50.0	45	80.4		
Diarrhea	Present	12	20.7	14	24.1	0.20	0.65	17	30.4	5	8.9	8.15	0.0043*
	Absent	46	79.3	44	75.9			39	69.6	51	91.0		
Constipation	Present	13	22.4	17	29.3	0.71	0.39	13	23.2	6	10.7	3.10	0.0780
	Absent	45	66.6	41	70.7			43	76.8	50	89.3		
Nausea	Present	14	24.1	11	19.0	0.46	0.49	16	28.6	9	16.1	2.52	0.11
	Absent	44	75.9	47	81.0			40	71.4	47	83.9		
Dizziness	Present	15	25.9	22	37.9	1.95	0.16	32	57.1	9	16.1	20.35	0.000006*
	Absent	43	74.1	36	62.1			24	42.9	47	83.9		
Insomnia	Present	18	31.0	42	72.4	19.88	0.00008*	24	42.9	10	17.9	8.28	0.004*
	Absent	40	68.9	16	27.6			32	57.1	46	82.1		
Chest pain	Present	14	24.1	14	24.1	0.00	1.0	16	28.6	3	5.4	10.72	0.001*
	Absent	44	75.9	44	75.9			40	71.4	53	94.6		
Rapid Pulse	Present	26	44.8	36	62.1	3.47	0.06	19	33.9	1	1.8	19.72	0.000009*
	Absent	32	55.2	22	37.9			37	66.0	55	98.2		
Weight gain	Present	12	20.7	7	12.1	1.57	0.20	8	14.3	5	8.9	0.78	0.376
	Absent	46	79.3	51	87.9			48	85.7	51	91.0		
Weight loss	Present	20	34.5	22	37.9	0.15	0.69	34	60.7	21	37.5	6.04	0.014*
	Absent	38	65.5	36	62.1			22	39.3	35	62.5		
Skin Breakout	Present	2	3.4	5	8.6	1.37	0.24	7	12.5	11	19.6	1.06	0.3034
	Absent	56	96.6	53	91.4			49	87.5	45	80.4		
Frequent colds	Present	18	31.0	20	34.5	0.16	0.69	25	44.6	19	33.9	1.35	0.245
	Absent	40	69.0	38	65.5			31	55.4	37	66.0		
Hair loss	Present	42	72.4	39	67.2	0.37	0.54	49	87.5	39	69.6	5.30	0.021*
	Absent	16	27.6	19	32.8			7	12.5	17	30.4		
Others	Present	3	5.1	4	6.9	4.00	0.4	4	7.2	0	0	4.15	0.13
	Absent	55	94.8	54	93.1			52	92.9	56	100		

**Table 5: Comparison between Post-test Cognitive symptoms of stress among Control and Experimental groups**

Cognitive Symptoms		Control Group (N=58)		Experimental Group (N=56)		$\chi^2$	P-value
		Post-Test		Post-Test			
		n	%	n	%		
Memory problems	Present	35	60.3	33	58.9	0.02	0.87
	Absent	23	39.7	23	41.0		
Indecisiveness	Present	8	13.8	5	8.9	0.67	0.41
	Absent	50	86.2	51	91.1		
Inability to concentrate	Present	33	56.9	16	28.6	9.33	0.0022*
	Absent	25	43.1	40	71.4		
Poor Judgment	Present	19	32.8	10	17.9	3.34	0.06
	Absent	39	67.2	46	82.1		
Trouble thinking clearly	Present	24	41.4	13	23.2	4.29	0.03*
	Absent	34	58.6	43	76.8		
Seeing only negative side of issue	Present	13	22.4	7	12.5	1.94	0.16
	Absent	45	77.6	49	87.5		
Anxious or racing thoughts	Present	34	58.6	17	30.4	9.21	0.002*
	Absent	24	41.4	39	69.6		
Constant worrying	Present	23	39.7	14	25	2.79	0.09
	Absent	35	60.4	42	75.0		
Loss of objectivity	Present	6	10.3	9	16.1	0.82	0.36
	Absent	52	89.7	47	83.9		
Fearful anticipation that something happens	Present	30	51.7	18	32.1	4.48	0.03*
	Absent	28	48.3	38	67.9		
Others	Present	0	0	2	3.6	2.11	0.2
	Absent	58	100	54	96.4		

Table 6: Comparison between Post-test Physical symptoms of stress among Control and Experimental groups

Physical Symptoms		Control Group (N=58)		Experimental Group (N=56)		$\chi^2$	P-value
		Post-Test		Post-Test			
		n	%	n	%		
Headache	Present	42	72.4	17	30.4	20.18	0.000007*
	Absent	16	27.6	39	69.6		
Backache	Present	32	55.2	13	23.2	12.18	0.0004*
	Absent	26	44.8	43	76.8		
Muscle tension and stiffness	Present	22	37.9	11	19.6	4.63	0.0313*
	Absent	36	62.1	45	80.4		
Diarrhea	Present	14	24.1	5	8.9	4.75	0.029*
	Absent	44	75.9	51	91.0		
Constipation	Present	17	29.3	6	10.7	6.11	0.013*
	Absent	41	70.7	50	89.3		
Nausea	Present	11	19.0	9	16.1	0.16	0.68
	Absent	47	81.0	47	83.9		
Dizziness	Present	22	37.9	9	16.1	6.88	0.008*
	Absent	36	62.1	47	83.9		
Insomnia	Present	42	72.1	10	17.9	34.18	<0.01*
	Absent	16	27.6	46	82.1		
Chest pain	Present	14	24.1	3	5.4	7.92	0.004*
	Absent	44	75.9	53	94.6		
Rapid Pulse	Present	36	62.06	1	1.8	47.23	<0.01*
	Absent	22	37.9	55	98.2		
Weight gain	Present	7	12.1	5	8.9	0.29	0.58
	Absent	51	87.9	51	91.0		
Weight loss	Present	22	37.9	21	37.5	0.00	0.96
	Absent	36	62.1	35	62.5		
Skin Breakout	Present	5	8.6	11	19.6	2.87	0.09
	Absent	53	91.4	45	80.4		
Frequent colds	Present	20	34.5	19	33.9	0.00	0.95
	Absent	38	65.5	37	66.0		
Hair loss	Present	39	67.2	39	69.6	0.08	0.78
	Absent	19	32.8	17	30.4		
Others	Present	4	6.9	0	0	4.00	0.14
	Absent	54	93.1	56	100		

## DISCUSSION:

### Prevalence of cognitive and physical symptoms of stress:

**Cognitive Symptoms:** The most frequently reported 5 cognitive symptoms of stress in control group are memory problems (67.2%), inability to concentrate (60.3%), fearful anticipation that something occurs (55.2%), anxious or racing thoughts (50%) and constant worrying and in Experimental group, are inability to concentrate (75%), Memory problems (71.4%), fearful anticipation that something occurs (60.7%), trouble thinking clearly (60.7%), constant worrying (35.4%) and anxious or racing thoughts (51.8%).

This is in partial consistence with the study findings of Damayanthi (2014) that the major symptoms of stress in students are having trouble concentrating on what they are doing and unable to stop thinking about their concerns at night, feeling anxious, feeling tense and nervous anxiety.<sup>5</sup>

**Physical Symptoms:** During pre-test the prevalence of top five highest percentages of physical symptoms of stress in control group are Headache (82.8%), Hair loss (72.4%), Back ache (46.6%), rapid pulse (44.8%) and muscle stiffness (34.5%) and in experimental group, Hair loss (87.5%), Headache (83.9%), weight loss (60.7%), Back ache (58.9%) and Dizziness (57.1%).

This is in partial agreement with the study findings of Pratibha, P.K., (2009) that the top five frequency symptoms are Headache 60.5%, Acidity 54.5%, Backache 47.2%, stiffness in neck and shoulders (43.4%) and stomach ache (11.3%). But in the present study, none of the students reported stomach ache.<sup>7</sup>

### Comparison of pre-test and post-test symptoms of stress in Experimental and Control group.

**Cognitive Symptoms of Stress:** There is significant decrease only in post-test of experimental group like indecisiveness, inability to concentrate, poor judgment, trouble thinking clearly, seeing only negative side of the issues, anxious or racing thoughts, constant worrying, loss of objectivity, fearful anticipation that something happens ( $p < 0.05$ ) and no decrease in control group ( $p > 0.05$ ). There is no

significant decrease of memory problems in post-test even in experimental group.

**Physical Symptoms of stress:** There is significant decrease in post-test symptoms only in experimental group like headache, backache, muscle tension and stiffness, diarrhea, insomnia, chest pain, rapid pulse, weight loss and hair fall. In post-test of experimental group, there is no decrease in certain physical symptoms like constipation, nausea, weight gain, skin break down, frequent colds. As these symptoms also occurs due to various other causes, their occurrence need to be thoroughly investigated for cause.

In Control group, there is no significant decrease in all physical symptoms of stress during post-test. But it was observed that there is a significant increase of insomnia during post-test, which may be due to many factors that are not tackled to decrease insomnia.

### Comparison of post-test cognitive and physical symptoms of stress between experimental and Control group.

**Cognitive Symptoms:** The post-test chi-square values for Experimental and Control groups shows statistical significance at 0.05 level for inability to concentrate (9.33), trouble thinking clearly (0.03), anxious or racing thoughts (1.94) and fearful anticipation that something happens (4.48)

**Physical symptoms:** The post-test chi-square values for Experimental and Control groups shows statistical significance at 0.05 level for headache (20.18), backache (12.18), muscle tension and stiffness (4.63), diarrhea (4.75), constipation (6.11), dizziness (6.88), insomnia (34.18), chest pain (7.92) and rapid pulse (47.23).

## CONCLUSION:

Keller, et.al (2011) revealed that stress have a detrimental effect, leading to psychological and physical health effects.<sup>5</sup> Naill, D.G and Katherine, E.B (2010) mentioned, the importance of developing stress management programmes for student nurses.<sup>6</sup>

Academic Institutions need to be sensitive for recognition of stress symptoms

among the student nurses. This enables them for implementing stress management techniques in curriculum and enhances job satisfaction among student nurses helping them to manage both the personal and professional stressors.

The stress management techniques relieved many cognitive and physical symptoms of stress, which had beneficial effects on students. The academicians and curriculum planners need to develop training strategies that can reduce symptoms of stress with appropriate designing of conducting counselling and training sessions to present nursing faculty so that they can provide personalised counselling sessions and stress management techniques on needy students.

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